



**Study Area** The study area is the combined watershed of the two major river systems of California's great Central Valley: the Sacramento River in the northern valley and the San Joaquin River in the southern valley. These river systems have a combined drainage area of over 41,000 square miles. Major cities in the study area include: Sacramento, Stockton, Modesto, Fresno, Merced, Redding, Yuba City, Marysville, Colusa, Red Bluff, and Manteca.



**Background** Since the mid-1800's, the Sacramento and San Joaquin River systems have been developed and managed to provide for the basic needs of flood protection, water supply, and other water-related activities that have contributed to the economic growth of the state and the nation. Over time, society's needs have changed and lessons have been learned regarding more effective approaches to long-term flood management. To meet the changing needs in the Central Valley, the flood management system needs to adapt to include a combination of structural and nonstructural approaches that consider the many interrelated benefits to society offered by the river system. The Federal Government and The Reclamation Board of the State of California have recognized this need and are committed to a new comprehensive approach to floodplain management as described in the 1997 Governor's Flood Emergency Action Team (FEAT) Report and the 1998 Energy and Water Development Appropriations Bill.



**Study Description** The comprehensive study will cover a four-year period with Phase I being completed by April 1999. The study will initially identify problems, opportunities, planning objectives, constraints, and measures to address flooding and ecosystem problems in the study area. It will ultimately develop a strategy for flood damage reduction and integrated ecosystem restoration along with identification of projects for early implementation. Solutions will include consideration of both structural and non-structural measures. The study will be fully coordinated and compatible with other related programs such as the CALFED Bay-Delta program, the CVPIA and SB 1086.



# Newsletter

Winter 1998/1999 - Issue 1

## Improving Flood Management

**I**n response to the January 1997 floods and the recurring flood threat in California's Central Valley, the U.S. Army Corps of Engineers and The Reclamation Board for the State of California are leading a basin-wide assessment to improve flood management and integrate the restoration of habitat along the Sacramento and San Joaquin rivers and their tributaries.

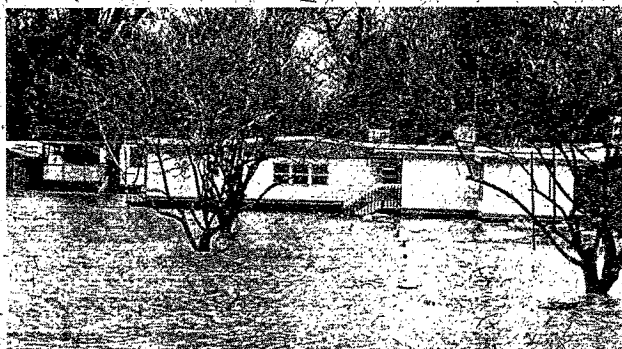
### Recognizing a Need

Since the mid-1800s, the Sacramento and San Joaquin river systems have been modified and managed to provide flood protection, water supply, transportation and other water-related activities that have contributed to the economic growth of California and the nation. Over the years, society's needs have changed and lessons have been learned

regarding more effective approaches to long-term flood management and ecosystem restoration.

To meet the changing needs of the Central Valley, the flood management system must adapt to prepare for future population increases in California and include approaches that take into account the many interrelated benefits offered by the river system. Federal, state and local government agencies have recognized the need for a more comprehensive approach to flood management and are committed to the development of a flood management master plan as recommended in Governor Pete Wilson's Flood Emergency Action Team Final Report and the 1998 Energy and Water Development Appropriations Act.

See "Flood Management" on Page 2



## Geographic Area

The great Central Valley of California contains two major river systems: the Sacramento River in the north and the San Joaquin River in the south. The Sacramento and San Joaquin River Basins Comprehensive Study will address the combined watershed of these



two major river systems, a drainage area of more than 40,000 square miles. Cities in this area include Redding, Red Bluff, Colusa, Yuba City, Marysville, Sacramento,

Stockton, Manteca, Modesto, Merced and Fresno. ■

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Reclamation Board,  
State of California



U.S. Army Corps of  
Engineers  
Sacramento District



## "Flood Management"

continued from page 1

### Regional Coordination

The Sacramento and San Joaquin River Basins Comprehensive Study will build upon existing information outlined in the San Joaquin River Management Program, the Upper Sacramento River Fisheries and Riparian Habitat Plan (SB1086), the Central Valley Improvement Act, the CALFED Bay-Delta Program and other studies and programs. All proposed measures will be coordinated and integrated with these and other programs. ■

### General Planning Objectives

- Improve flood management throughout the system
- Protect and restore riparian habitat, riverine and wetlands habitat systemwide.
- Resolve policy issues and address institutional issues.

### Forming Alternatives

There are a number of studies and reports already in existence that make recommendations that address the problems of flooding and ecosystem degradation in the Central Valley. The Study Team is reviewing this information, identifying previously suggested measures and working closely with stakeholders and technical experts to develop new approaches.

These measures may include:

- Re-operating the system reservoirs
- Reallocating storage
- Setting back levees
- Creating meanderbelts
- Creating new upstream storage
- Creating new bypasses
- Dredging

## Project Timeline

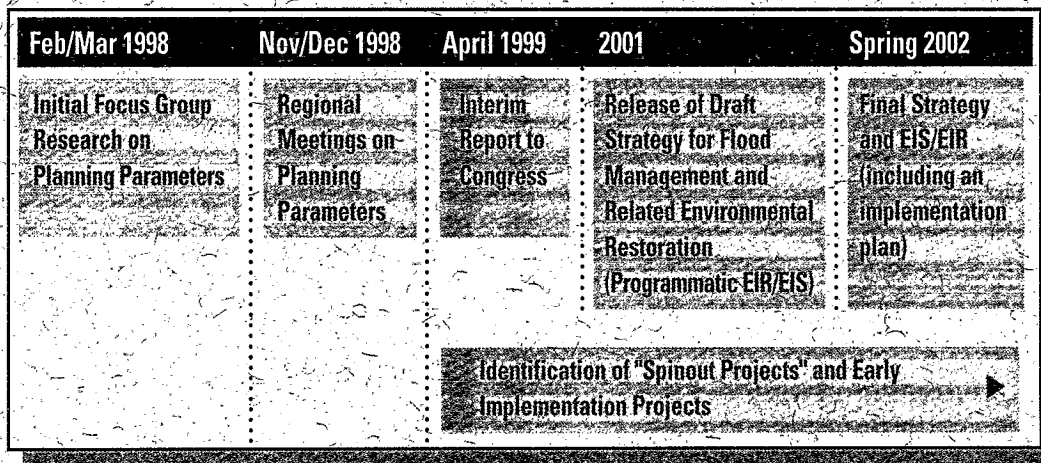
### Phase I

The first phase of the Comprehensive Study is 18 months long and will evaluate flood damage and related environmental problems along the rivers. The team will also identify flood damage reduction measures and associated environmental restoration measures to be modeled and evaluated in Phase II. Specifically, Phase I includes the development of a framework plan to guide planning and analysis, development of a Final Post Flood Assessment and preliminary development of hydrologic models. Phase I will conclude in April 1999 with an Interim Report to Congress, which is not a decision document. It will include an executive summary of Phase I progress and a Final Post Flood Assessment.



### Phase II

Phase II will continue the development and calibration of basin-wide hydrologic and hydraulic models and evaluate a broad array of measures to determine their flood damage reduction and associated environmental restoration effectiveness. The Phase II Report will include a programmatic Environmental Impact Statement/ Environ-



mental Impact Report that describes the master strategy for flood damage reduction and integrated ecosystem restoration measures.

Combinations of measures will be formulated into a strategy for flood damage reduction and associated ecosystem restoration that will guide future implementation of site-specific measures. Floodplain management policy changes and recommendations on how to remove institutional barriers to a watershed approach will be a major element of the overall solution.

The flood damage reduction and integrated ecosystem restoration strategy will facilitate implementation of existing and proposed projects. Existing projects will be incorporated into the strategy. New features of the strategy that have broad support and that can be accomplished



under existing authorities and funding will be "spun-off" for expeditious implementation under those authorities.

Some "early implementation projects," for which new authorities are needed, will be identified, developed to the extent possible,

and recommended for authorization and implementation. Early implementation projects must address identifiable flooding problems, be consistent with the general planning objectives, demonstrate broad acceptability, and be readily implementable. ■

## Tell Us What You Think

Public involvement is essential to the development of the Sacramento and San Joaquin River Basins Comprehensive Study. The Study Team has already held informal



*"The most effective management of the flood plains of the major rivers may not be a primarily 'structural approach' of building levees and dams, but rather a combination of structural and nonstructural approaches that considers the many interrelated benefits to society offered by river system."*

*— Army Corps of Engineers*

*"A comprehensive study of the system should closely evaluate nonstructural alternatives on an equal level with structural approach."*

*— Final Report of the Flood Emergency Action Team*

*"A well-balanced blend of both structural and nonstructural approaches in almost any area will lead to optimal flood protection."*

*— Final Report of the Flood Emergency Action Team*

meetings and workshops with interested stakeholders and is planning many more. In Spring 1999 there will be a number of public meetings throughout the Central Valley to elicit input on the work done to date and future steps. Check your mail for meeting notices or call the Study Team directly to find out how you can get involved. ■

**Please call the  
Project Team  
for more  
Information  
916.557.5140**



## Participating Agencies

Because of its comprehensive nature, the Sacramento and San Joaquin River Basins Comprehensive Study must take full advantage of the expertise and capabilities of the various participating agencies. An Executive Committee,

which meets quarterly, is co-chaired by the Army Corps of Engineers and The State of California Reclamation Board. The Committee was established to assist in resolving emerging policy issues and to ensure consistent and full coordination. ■

### Executive Committee

#### Federal

- Army Corps of Engineers
- Fish and Wildlife Service
- Forest Service
- Environmental Protection Agency
- CALFED Bay-Delta Program
- Federal Emergency Management Agency
- Bureau of Land Management
- Geological Survey
- Natural Resources Conservation Service
- National Marine Fisheries Service
- Bureau of Reclamation

#### State

- The State of California Reclamation Board
- Department of Fish and Game
- State Water Resources Control Board
- Department of Water Resources
- CALFED Bay-Delta Program
- Department of Parks & Recreation
- Department of Boating & Waterways
- State Lands Commission
- Office of Emergency Services
- Department of Food & Agriculture

Comprehensive Study . . . . .



Sacramento  
and  
San Joaquin  
River Basins

### Comprehensive Study

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## Sacramento & San Joaquin River Basins Comprehensive Study

Flood Damage Reduction and Environmental Restoration



US Army Corps of Engineers  
Sacramento District



The Reclamation Board  
State of California

### MISSION STATEMENT

To develop a system-wide, comprehensive flood management plan for the  
Central Valley to reduce flood damage and integrate ecosystem restoration.



## Background

- 1997 Storm Highlighted System Vulnerability
- Governors "FEAT" Report
- 1998 CW Appropriations



## Other Programs

- CALFED
- SB 1086
- CVPIA
- San Joaquin River Management Program
- Sacramento River Watershed Program
- Others



## Overview

- Phase I April 1999
  - System-wide Framework Study
  - Post Flood Assessment
  - Basin-wide Hydrologic/Hydraulic Models
- Phase II Spring 2002
  - Environmental Documentation
  - Programmatic Document
  - Implementable Projects



## Phase I Post Flood Assessment

- Documents '83, '86, '95 and '97 floods
  - failures
  - flooded areas
  - damages
- Utilizes existing information
- Determines population at risk
- Establish economics baseline condition for the Framework Study



## Phase I Hydrologic/Hydraulic Models

- Develop hydrologic model incorporating latest flow-frequency data and reservoir operations criteria
- Develop hydraulic model consisting of a one-dimensional, unsteady state hydrodynamic model of the baseline condition
- Evaluate historical sedimentation problems and erosion and deposition trends



## Phase I System-wide Framework Study

- Public Outreach
- Identify system flooding & environmental problems
- Identify potential flood damage reduction and ecosystem restoration measures
- Identify policy and/or legislative needs
- Identify components for immediate implementation under existing authorities



## Problem Identification Summary of Focus Group Input

- Continued development within flood plains has resulted in a greater risk for flood damage
- There is inadequate channel capacity (sedimentation)
- Continued erosion of banks, levees and berms; levee instability in some sections threatens system reliability
- The quality and extent of riparian habitat has greatly declined
- Maintenance of the system is costly and sometimes hindered by institutional policies and procedures



## General Planning Objectives

- Improve flood risk management throughout the system
- Integrate protection and restoration of ecosystem into the flood damage reduction measures
- Resolve policy issues and address limiting institutional procedures



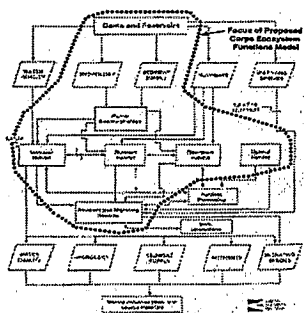
### Flood Damage Reduction Measures

- Flood Flow Regime -- modify or create storage and/or releases
- System Capacity -- backup levees, setback levees, raise levees, meanderbelts, bypasses
- System Reliability -- protect streambank; strengthen, raise, repair or eliminate levees
- Management of the Floodplain -- modify existing development to reduce future damage; discourage future development in floodplains



### Environmental Restoration Measures

- Reforest Floodplain Corridors
- Protect Existing Natural Physical Processes
- Restore Natural Physical Processes
- Allow Riparian Forest to Reach Maturity
- Restore Oxbows
- Remove Bank Protection to Restore Natural Processes
- Restore and Reforest High Terraces and Berms
- Raise Levees to Allow Habitat Development
- Create Habitat Node(s)





## Policy Issues

- Initial and Follow-up Policy Meetings
- Policy
  - Floodplain Management Issue Loss of Hydraulic Capacity
  - Regulatory Policies (Environmental)
  - NED Issue Develop Alternative Ways to Look at "Best Plan"
  - Hydraulic Impacts
- Major Issues
  - Regulatory Process
  - Floodplain Management
  - Quantifying and Comparing Benefits of Multi-Objective Plans



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## Phase II

- Evaluate Multi-objective Measures
- Formal NEPA/CEQA Coordination
  - Public Scoping Meetings
- Develop Programmatic EIS/EIR
- Hydrologic and Hydraulic Model calibration
- Continue Development of Ecosystem Model
- Complete Economic and Environmental Evaluations
- Report to Congress



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## Implementation Strategy

### *Three Types*

- Spin-Off Projects
- Early Implementation Projects
- Full Programmatic Implementation



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## Spin-Off Projects

- Meet Planning Objectives
- Existing Authorities and Secured Funding
- Project Proponent or Sponsor

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## Spin-Off Projects

### *Examples*

- Chico Landing to Red Bluff, Section 1135 Proposal
- U.C. Davis River Meander and Vegetation Model
- Woodson Bridge

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## Early Implementation Projects

- Significant
- Broad Support
- Sponsor

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## Full Program Implementation

- PEIS/EIR
- Authorization Programmatic in Nature
- Follow-on Planning and Design Studies
- Early Implementation

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## Outreach

- Strategy
  - Local Support Group Meetings
  - Public Meetings
- Newsletters
- Brochure
- Web Page
  - [www.spk.usace.army.mil/civ/ssj](http://www.spk.usace.army.mil/civ/ssj)
  - interactive e-mail

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## Sacramento & San Joaquin River Basins Comprehensive Study

Flood Damage Reduction and Environmental Restoration



US Army Corps of Engineers  
Sacramento District



The Reclamation Board  
State of California

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*To develop a system-wide, comprehensive flood management plan for the Central Valley to reduce flood damage and integrate ecosystem restoration.*

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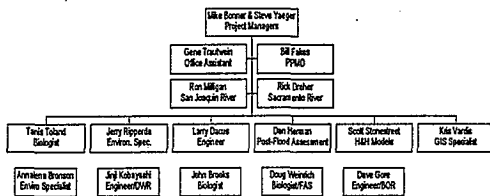
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## Study Team



## Executive Committee/ Participating Agencies

|  |                                   |
|--|-----------------------------------|
| US Army Corps of Engineers             | The Reclamation Board             |
| CALFED                                 | Department of Fish & Game         |
| State Water Resources Control Board    | Office of Emergency Services      |
| Department of Parks & Recreation       | Department of Food & Agriculture  |
| State Lands Commission                 | Bureau of Land Management         |
| US Geological Survey                   | National Marine Fisheries Service |
| Department of Boating & Waterways      | Bureau of Reclamation             |
| Natural Resources Conservation Service | US Forest Service                 |
| US Fish & Wildlife Service             | US EPA                            |
| Department of Water Resources          | FEMA                              |



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